



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,511	02/25/2002	Szemeng Cheng	9432-000170	2978
27572	7590	12/21/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			HENNING, MATTHEW T	
		ART UNIT	PAPER NUMBER	
		2131		

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/082,511	CHENG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Matthew T. Henning	2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 October 2006.  
 2a) This action is **FINAL**.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-4, 7-14, 17 and 20-26 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-4, 7-14, 17 and 20-26 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 02 October 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

1 This action is in response to the communication filed 10/02/2006.

2 **DETAILED ACTION**

3 ***Response to Arguments***

4 Applicant's arguments filed 10/02/2006 have been fully considered but they are not  
5 persuasive.

6 Regarding applicants' argument that the cited prior art did not disclose taking the  
7 difference of only every other pair of two consecutive samples, the examiner does not find the  
8 argument persuasive. This argument is moot in view of the new grounds of rejection presented  
9 below.

10 Claims 1-4, 7-14, 17, and 20-26 have been examined and claims 5-6, 15-16, and 18-19  
11 have been cancelled.

12 All objections and rejections not presented below have been withdrawn.

13 ***Specification***

14 The specification is objected to as failing to provide proper antecedent basis for the  
15 claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the  
16 following is required: The specification lacks support for the limitation of "taking the difference  
17 of only every other pair of two consecutive samples". See the rejection of the claims under 35  
18 USC 112 1<sup>st</sup> Paragraph below.

19 ***Claim Rejections - 35 USC § 112***

20 The following is a quotation of the first paragraph of 35 U.S.C. 112:

21 The specification shall contain a written description of the invention, and of the manner and process of making  
22 and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it  
23 pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode  
24 contemplated by the inventor of carrying out his invention.  
25

Art Unit: 2131

1           Claims 1-4, 7-14, 17, and 20-26 are rejected under 35 U.S.C. 112, first paragraph, as  
2 failing to comply with the written description requirement. The claim(s) contains subject matter  
3 which was not described in the specification in such a way as to reasonably convey to one skilled  
4 in the relevant art that the inventor(s), at the time the application was filed, had possession of the  
5 claimed invention. Claims 1, 8, and 10 all contain the limitation of “taking the difference of **only**  
6 every other pair of two consecutive samples”, which there is no mention of in the specification.  
7 Rather the specification recites taking the difference of every pair of two consecutive samples, as  
8 is seen in Paragraph 0021 of the original specification. Furthermore, the applicants have failed  
9 to show support for this new limitation in the specification, and the examiner is unable to readily  
10 find support for this limitation in the original specification. As such, the claims are rejected for  
11 failing to meet the written description requirement of 35 USC 112 1<sup>st</sup> Paragraph.

12           ***Claim Rejections - 35 USC § 103***

13           The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all  
14 obviousness rejections set forth in this Office action:

15           *A patent may not be obtained though the invention is not identically disclosed or  
16 described as set forth in section 102 of this title, if the differences between the subject matter  
17 sought to be patented and the prior art are such that the subject matter as a whole would have  
18 been obvious at the time the invention was made to a person having ordinary skill in the art to  
19 which said subject matter pertains. Patentability shall not be negated by the manner in which  
20 the invention was made.*

21

22           Claims 1-4, 8-14, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable  
23 over Neubauer et al. (“Audio Watermarking of MPEG-2 AAC Bit Streams”) hereinafter referred  
24 to as Neubauer, and further in view of Cox et al. (“Secure Spread Spectrum Watermarking for  
25 Multimedia”) hereinafter referred to as Cox, and further in view of Birks et al. (US Patent

Art Unit: 2131

1 Number 6,373,530) hereinafter referred to as Birks, , and further in view of Sprague (US Patent  
2 Number 4,617,645), and further in view of Brody et al. (US Patent Number 6,718,501).

3

4 Regarding claims 1, 8, and 10, Neubauer disclosed an encoding apparatus for embedding  
5 data in a compressed data stream (See Neubauer Fig. 7), the apparatus comprising: a decoder  
6 receptive of the compressed data stream and operable to decode the compressed data stream,  
7 thereby obtaining a decoded data stream (See Neubauer Fig. 8 and Page 5 Section 4.1 Especially  
8 “Parts of Decoder”); a data embedder in communication with said decoder and receptive of the  
9 data and the decoded data stream, said data embedder operable to embed the data into the data  
10 stream using a spread spectrum technique, thereby obtaining a data-embedded decoded data  
11 stream (See Neubauer Fig. 8 and Section 4.1 Especially “Watermark Generator” and “Weighting  
12 and Adding”); and a encoder in communication with said data embedder, said encoder operable  
13 to encode the data-embedded decoded data stream, thereby obtaining a data-embedded  
14 compressed data stream (See Neubauer Fig. 8 and Section 4.1 Especially “Parts of Encoder”),  
15 however, Neubauer failed to disclose partially decoding the stream and spread spectrum  
16 embedding in the quantized indices, sorting the stream in ascending or descending order, taking  
17 the difference of only every other pair of consecutive samples as a new partially decoded data  
18 stream, alternating the sign of every other difference value, and substituting the new partially  
19 decoded data stream for the partially decoded data stream.

20 Cox teaches a method for embedding data into quantized indices of multimedia (See Cox  
21 Pages 1676-1678 Section III).

1 Birks teaches that by in a system that watermarks encoded data, it is advantageous to  
2 watermark the quantization indices as there is no need for inverse or forward transformation and  
3 therefore less processing.

4 Sprague teaches a method for compressing audio data involving sorting the data in  
5 descending order (See Sprague Claim 6), and then constructing a new set of data by taking the  
6 difference between pairs of consecutive samples resulting in an alternating signed data (See  
7 Sprague Col. 3 Lines 7-19).

8 Brody teaches that in an watermarking system, the watermark should be made perceptible  
9 by alternating every other sign of the watermark data (See Brody Col. 22 Paragraph 2).

10 It would have been obvious to the ordinary person skilled in the art at the time of  
11 invention to employ the teachings of Cox and Birks in the audio watermarking system of  
12 Neubauer by only decoding the data partially and embedding the watermark data in the  
13 quantization indices. This would have been obvious because the ordinary person skilled in the  
14 art at the time of invention would have been motivated to reduce the amount of processing  
15 required to embed and read the watermark.

16 It would have been obvious to the ordinary person skilled in the art at the time of  
17 invention to employ the teachings of Sprague in the audio watermarking system of Neubauer,  
18 Cox, and Birks by utilizing the compression system of Sprague for compressing the quantization  
19 indices. This would have been obvious because the ordinary person skilled in the art at the time  
20 of invention would have been motivated to considerably compact the quantization indices.  
21 Further, in this combination, the variance would be reduced as a result of taking the difference of  
22 pairs of consecutive samples.

1        Further still, it was well known in the art at the time of invention that in predictive  
2 differential PCM (See Neubauer Page 2 “Interoperability with PCM Watermarking”)  
3 compression, the differential width between a pair of samples determines the value of a remarked  
4 sample. As such, it would have been obvious in the combination of Neubauer, Cox, Birks, and  
5 Sprague to determine each separate indicia based on the difference of a separate pair of samples.

6        It further would have been obvious to the ordinary person skilled in the art at the time of  
7 invention to employ the teachings of Brody in the watermarking system by alternating the sign of  
8 every other watermark signal. This would have been obvious because the ordinary person  
9 skilled in the art would have been motivated to have the watermark be perceptible.

10  
11        Regarding claims 2 and 11, the combination of Neubauer, Cox, Birks, Sprague, and  
12 Brody disclosed an index selector in communication with said partial decoder, said index  
13 selector operable to select a plurality of the quantization indices, thereby obtaining selected  
14 indices, and to determine respective amounts by which to modify the selected indices, wherein  
15 said data embedder is operable to embed the data into the quantization indices by modifying the  
16 selected indices according to the respective amounts, thereby obtaining a data-embedded  
17 partially decoded data stream (See Cox Page 1677 Col. 2 Paragraph 2, and Neubauer Section 4.1,  
18 “Watermark Generator” and “Weighting and Adding”).

19        Regarding claims 3, 12, and 13, the combination of Neubauer, Cox, Birks, Sprague, and  
20 Brody disclosed that the index selector is operable to: choose indices corresponding to ranges  
21 within a sensitive portion of a human sensory range; discard zero indices; and always determine

Art Unit: 2131

1 a minimum amount (See Cox Page 1677 Col. 2 Paragraph 2 and Section IV B ("Inserting and  
2 Extracting the Watermark").

3 Regarding claims 4, 9, and 14, the combination of Neubauer, Cox, Birks, Sprague, and  
4 Brody disclosed that the data embedder is receptive of an encoding key and operable to embed  
5 the data based on the encoding key (See Neubauer Page 2 Section "Robustness").

6 Regarding claims 24 and 26, the combination of Neubauer, Cox, Birks, Sprague, and  
7 Brody disclosed that the enhanced sequence was derived in accordance with E (the equation of  
8 claims 24 and 26) (See Sprague 3 Lines 7-23 and Brody Col. 22 Paragraph 2).

9 Regarding claim 25, the combination of Neubauer, Cox, Birks, Sprague, and Brody  
10 disclosed extraction in accordance with E (the equation of claim 25) (See Neubauer Section  
11 3.2.2).

12 Claims 7, 17, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over  
13 Neubauer, Cox, Birks, Sprague, and Brody as applied to claims 1 and 10 above, and further in  
14 view of Smyth et al. (US Patent Number 5,974,380) hereinafter referred to as Smyth.

15 Neubauer, Cox, Birks, Sprague, and Brody disclosed an audio stream watermarking  
16 system (See the rejection of claim 1 above) in which "side information" was transmitted between  
17 the decoder and the encoder (See Neubauer Fig. 8 and Page 4 Paragraph 2) however, Neubauer,  
18 Cox, and Birks failed to disclose the specifics of the "side information".

19 Smyth teaches that in an audio Huffman coding system, "side information" includes bit  
20 allocations, scale factors, PMODES, TMODES, and codebook (See Smyth Col. 36 Lines 45-50).

21 It would have been obvious to the ordinary person skilled in the art at the time of  
22 invention to employ the teachings of Smyth in the watermarking system of Neubauer, Cox,

1 Birks, Sprague, and Brody by including the necessary information for coding and decoding in the  
2 side information including the codebook. This would have been obvious because the ordinary  
3 persons skilled in the art at the time of invention would have been motivated to provide the side  
4 information that was common in the art.

### *Conclusion*

Claims 1-4, 7-14, 17, and 20-26 have been rejected.

Applicant's amendment necessitated the new ground(s) of rejection presented in this

8 Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

9 Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

10 A shortened statutory period for reply to this final action is set to expire THREE  
11 MONTHS from the mailing date of this action. In the event a first reply is filed within TWO  
12 MONTHS of the mailing date of this final action and the advisory action is not mailed until after  
13 the end of the THREE-MONTH shortened statutory period, then the shortened statutory period  
14 will expire on the date the advisory action is mailed, and any extension fee pursuant to 37  
15 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,  
16 however, will the statutory period for reply expire later than SIX MONTHS from the date of this  
17 final action.

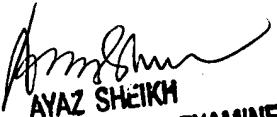
18 Any inquiry concerning this communication or earlier communications from the  
19 examiner should be directed to Matthew T. Henning whose telephone number is (571) 272-3790.  
20 The examiner can normally be reached on M-F 8-4.

Art Unit: 2131

1        If attempts to reach the examiner by telephone are unsuccessful, the examiner's  
2 supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the  
3 organization where this application or proceeding is assigned is 571-273-8300.

4        Information regarding the status of an application may be obtained from the Patent  
5 Application Information Retrieval (PAIR) system. Status information for published applications  
6 may be obtained from either Private PAIR or Public PAIR. Status information for unpublished  
7 applications is available through Private PAIR only. For more information about the PAIR  
8 system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR  
9 system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10  
11         
12       Matthew Henning  
13       Assistant Examiner  
14       Art Unit 2131  
15       12/19/2006

  
AYAZ SHEIKH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100